(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
14 October 2004 (14.10.2004)

PCT

(10) International Publication Number
WO 2004/088312 A3

(51) International Patent Classification[7]: G01N 33/533, C07D 209/56, 333/02, C07B 61/00, A61K 38/25

(21) International Application Number: PCT/GB2004/001418

(22) International Filing Date: 31 March 2004 (31.03.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

0307559.5	2 April 2003 (02.04.2003)	GB
60/465,807	28 April 2003 (28.04.2003)	US

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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*

(88) Date of publication of the international search report: 24 March 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: FLUORESCENTLY TAGGED LIGANDS

(57) Abstract: Library comprising a plurality of tagged non-peptide ligands of formula (I): $(Lig\ J_L)_m\ L(J_T\ Tag)_m\ (J_TL(J_LLig)_m)_p$ including and salts thereof comprising one or a plurality of same or different ligand moieties Lig each linked to a one or a plurality of same or different tag moieties Tag via same or different linker moieties L and same or different linking site or linking functionality J_T and J_L wherein Lig comprises a GPCR ligand, an inhibitor of an intracellular enzyme or a substrate or inhibitor of a drug transporter; L is a single bond or is any linking moiety selected from a heteroatom such as N, O, S, P, branched or straight chain saturated or unsaturated, optionally heteroatom containing, $C_{1\text{-}600}$ hydrocarbyl and combinations thereof, which may be monomeric, oligomeric having oligomeric repeat of 2 to 30 or polymeric having polymeric repeat in excess of 30 up to 300; Tag is any known or novel tagging substrate; m are each independently selected from a whole number integer from 1 to 3; p is 0 to 3 characterised in that linking is at same or different linking sites in compounds comprising different Lig, J_L, L J_T and/or - Tag and is at different linking sites in compounds comprising same Lig, J_L, L J_T and/or - Tag; process for the preparation thereof; process for the preparation of a library compound of formula (I) or a precursor of formula (IV); method for selecting a compound of formula (I) from a library thereof; compound of formula (I) associated with information relating to its pharmacological properties; a novel compound of formula (I) or precursor of formula (IV); uses thereof; methods for binding or inhibition therewith; use of a fluorescent target therewith; a modified cell surface GPCR and cells expressing the same; and a kit comprising a compound of formula (I) and a target therefor.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/001418

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G01N33/533 C07D209/56 C07D333/02 C07B61/00 A61K38/25

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C07B C07D G01N A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, CHEM ABS Data, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	HEITHIER, HELMUT ET AL: "Synthesis and Properties of Fluorescent .beta.-Adrenoceptor Ligands" BIOCHEMISTRY , CODEN: BICHAW; ISSN: 0006-2960, vol. 33, no. 31, 1994, pages 9126-9134, XP002298679 the whole document	1-18, 20-22, 26,27, 29, 31-37, 40-43
X	J.C. MCGRATH ET AL: "Viewing adrenoceptors:past, present and future; commentary and a new technique" PHARMACOLOGY COMMUN, vol. 6, no. 1-3, 1995, pages 269-279, XP009037236 page 275 - page 278	1-18, 20-22, 26,27, 31-37, 40-43

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[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 October 2004	22 12. 2004

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Österle, C

Form PCT/ISA/210 (second sheet) (January 2004)

INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/001418

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P,X	S.J. BRIDDON ET AL: "Application of fluorescence correlation spectroscopy to the measurement of agonist binding to a G-protein coupled receptor at the single cell level" FARADAY DISCUSSIONS, vol. 126, 12 September 2003 (2003-09-12), pages 197-207, XP009037298 the whole document	1-18, 20-22, 26,27, 29, 31-37, 40-43
P,X	J.G. BAKER ET AL: "Pharmacology and direct visualization of BODIPY-TMR-CGP: A long-acting fluorescent beta2-adrenoceptor agonist" BRITISH JOURNAL OF PHARMACOLOGY, vol. 139, no. 2, May 2003 (2003-05), pages 232-242, XP002298676 the whole document	1-18, 20-22, 26,27, 29, 31-37, 40-43
P,X	S.J. BRIDDON ET AL: "Quantitative analysis of the formation and diffusion of A1-adenosine receptor-antagonist complexes in single living cells" PNAS, vol. 101, no. 13, 16 March 2004 (2004-03-16), pages 4673-4678, XP002298677 the whole document	1-18, 20-22, 26,27, 29, 31-37, 40-43
P,L	& [Online] 16 March 2004 (2004-03-16), Retrieved from the Internet: URL:WWW.PNAS.ORG/CONTENT/VOL101/ISSUE13/> [retrieved on 2004-09-30] *table of contents of PNAS mar 30 2004* *p. 10 shows internet publication date of march 16th 2004*	
X	US 4 774 339 A (KANG HEE C ET AL) 27 September 1988 (1988-09-27) cited in the application the whole document	29
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X	US 5 433 896 A (KANG HEE C ET AL) 18 July 1995 (1995-07-18) cited in the application the whole document	29
X	US 5 451 663 A (KANG HEE C ET AL) 19 September 1995 (1995-09-19) cited in the application the whole document	29

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/GB2004/001418

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 187 288 A (KANG HEE C ET AL) 16 February 1993 (1993-02-16) cited in the application the whole document	29
X	US 6 005 113 A (KLAUBERT DIETER H ET AL) 21 December 1999 (1999-12-21) cited in the application the whole document	29
X	US 6 054 557 A (DESJARDINS CLARISSA ET AL) 25 April 2000 (2000-04-25) cited in the application the whole document	29
A	EP 0 808 829 A (NISSHIN SPINNING) 26 November 1997 (1997-11-26) the whole document	1-22, 24-27, 29, 31-37, 40-43
A	OAKLEY R H ET AL: "THE CELLULAR DISTRIBUTION OF FLUORESCENTLY LABELED ARRESTINS PROVIDES A ROBUST, SENSITIVE, AND UNIVERSAL ASSAY FOR SCREENING G PROTEIN-COUPLED RECEPTORS" ASSAY AND DRUG DEVELOPMENT TECHNOLOGIES, MARY ANN LIEBERT, NEW YORK, NY, US, vol. 1, no. 1-1, November 2002 (2002-11), pages 21-30, XP001181634 ISSN: 1540-658X the whole document	1-22, 24-27, 29, 31-37, 40-43
A	M.-P- FAURE ET AL: "Synthesis of a biologically active fluorescent probe for labeling neurotensin receptors" THE JOURNAL OF HISTOCHEMISTRY AND CYTOCHEMISTRY, vol. 42, no. 6, 1994, pages 755-763, XP002298678 the whole document	1-22, 24-27, 31-37, 40-43

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/GB2004/001418

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4774339 A	27-09-1988	NONE	
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INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/001418

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. [X] Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 32-35 and 43 (in part) are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

2. [ ] Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. [ ] Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. [ ] As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. [ ] As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. [ ] As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. [X] No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-22, 24-27, 29, 31-37, 40-42, 43 (in part)

Remark on Protest

[ ] The additional search fees were accompanied by the applicant's protest.

[ ] No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-22,24-27,29,31-37,40-42,43 (in part)

Library of compounds of formula (I) and the preparation of said library (claims 1-21),
compounds of formula I and their preparation (claims 22,26,27),
method for selecting a compound of formula I from a library (claims 24 and 25),
linker of formula V or V' (claim 29),
use of a compound of formula I or I' or a library of compounds of formula I (claim 31),
method for receptor binding or inhibition comprising contacting a compound of formula I or I' with a sample (claims 32-35),
use of a fluorescent target for the above method (claims 36-37),
kit comprising a compound of formula I or I' (claims 40-42),
library, compound, precursor, process, method, target material or kit of claim 43 insofar as they are part of claims 1-22, 24-27, 29,31-37,40-42

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2. claims: 23,28,30,43 (in part)

Process for the preparation of a compound of formula IV (claim 23),
compounds of formula IV or IV' (claim 28),
kit comprising a compound of formula IV or IV' (claim 30 in part),
compound, process, kit of claim 43 insofar as they are part of claims 23, 28 or 30

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3. claims: 30, 43 (both in part)

kit comprising a linker of formula V or V' (claim 30 in part),
kit of claim 43 insofar as it is part of claim 30

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4. claims: 38, 39 and 43 (in part)

cell surface GPCR and CHO cells expressing these
